**Curriculum Topic Review**

**SCH3U (E. Solutions and Solubility)**

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E3.6 explain the difference between strong and weak acids, and between strong and weak bases, in terms of degree of ionization



Figure 1. Complete dissociation of strong acid.



Figure 2. Incomplete dissociation of weak acid.

**Introduction**

- activate prior knowledge about acids and bases by questioning students

- use T-chart on chalkboard to compare and contrast

|  |  |
| --- | --- |
| **Strong Acids** | **Weak Acids** |
| HCl, HBR, HI, H2SO4 etc... | CH3COOH, H2C2O4 etc... |
| Complete dissociation in water | Incomplete dissociation in water |
| HA → H+ + A- | HA ↔ H+ + A- |

**Musical Chairs (adapted for E3.6)**

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| --- | --- | --- | --- | --- |
|  | **Step 1: Before Dissociation** | **Step 2: Equilibration** | **Step 3: After Dissociation** | **Debrief** |
| **Strong Acid** | - students given piece of paper  - students find partner  - one writes H+ on paper while other writes A-  - students hold paper in front of chest | - students mingle when music\* plays  - students must sit down and hold brief conversation (~1-2sec just saying hello) when they encounter another student (H+ matches with A- or vice versa)  -pairs then stand up and start mingling again | - students freeze when music stops (~60 seconds of music)  - # of students standing up versus sitting down is recorded | - majority of students should be standing up  - strong acid should be completely dissociated  HA → H+ + A- |
| **Weak Acid** | - same as strong acid | - same as strong acid except conversation must be ~10-15sec (example conversation has pairs asking each other where the went over the holidays) | - same as strong acid | - majority of students should be sitting down  - weak acid should be incompletely dissociated  HA ↔ H+ + A- |
| **Strong Base** | - same as strong acid except using Na+ and OH- | - same as strong acid | - same as strong acid | - majority of students should be standing up  - strong base should be completely dissociated  NaOH → Na+ + OH- |
| **Weak Base** | - same as strong acid  - most students are NH3  - remaining students find partner  - one writes H+ on paper while other writes OH- | - same as weak acid except NH3 matches up with H+ while OH- matches with nobody | - same as strong acid | - a few students should be sitting down as NH4+  - weak base incompletely dissociates to form NH4+  NH3 + H2O ↔ NH4+ + OH- |

**\***music courtesy of YouTube

“Chemistry Music Video 25: Acids And Bases”

<http://www.youtube.com/watch?v=u9nOIZDdvRw>